

Claims

[c1] What is claimed is:

1.A secondary communication module of a wireless communication device, wherein the wireless communication device provides a first protocol wireless communication and the secondary communication module is detachably installed on the wireless communication device, the communication module comprising:

a housing;

a battery installed inside the housing for providing power to the wireless communication device;

a radio frequency (RF) circuit installed inside the housing for converting RF signals and baseband signals and for providing a second protocol wireless communication;
and

a baseband circuit connected to the RF circuit for processing the baseband signals.

[c2] 2.The communication module of claim 1, further comprising an antenna installed inside the housing for emitting and receiving RF signals.

[c3] 3.The communication module of claim 1 wherein the module is connected to a computing device through a

cradle and provides wireless communication to the computing device.

- [c4] 4.The communication module of claim 3 wherein the cradle is connected to the computing device via a USB port.
- [c5] 5.The communication module of claim 1 wherein the first protocol is one of GSM, GPRS, PHS, CDMA and 3G protocols.
- [c6] 6.The communication module of claim 1 wherein the second protocol is one of GSM, GPRS, PHS, CDMA and 3G protocols.
- [c7] 7.The communication module of claim 1 wherein the wireless communication device and the secondary communication module communicate with each other by AT commands.
- [c8] 8.The communication module of claim 1 wherein the RF circuit comprises an RF receiver for converting RF signals into baseband signals and an RF emitter for converting baseband signals into RF signals.
- [c9] 9.The communication module of claim 1 further comprising a memory installed inside the housing for storing data.

- [c10] 10. An external communication module for connecting to an electric device to provide a first protocol wireless communication to the electronic device, the communication module comprising:
- a battery;
 - a first RF circuit for converting RF signals and baseband signals; and
 - a first baseband circuit connected to the first RF circuit for processing the baseband signals, wherein the battery provides power to the first RF circuit and the first baseband circuit.
- [c11] 11. The communication module of claim 10 wherein the electronic device comprises a second antenna, and the first RF circuit of the external communication module connects to the second antenna for emitting and receiving RF signals through the second antenna.
- [c12] 12. The communication module of claim 11 wherein the electronic device and the external communication module are controlled by a main control interface.
- [c13] 13. The communication module of claim 12 wherein the electronic device comprises a second RF circuit and a second baseband circuit to provide a second protocol wireless communication, the second RF circuit connects

to the second antenna for emitting and receiving RF signals, and the battery of the external communication module provides power to the electronic device.

[c14] 14.The communication module of claim 10 further comprising a memory for storing data.

[c15] 15.A communication system comprising:
an electronic device having a second RF circuit and a second baseband circuit to provide a second protocol wireless communication; and
an external communication module having a battery, a first RF circuit for converting RF signals and baseband signals, and a first baseband circuit to provide a first protocol wireless communication,
wherein the external communication module is detachably connected to the electronic device and the battery of the external communication module supplies power to the electronic device and the external communication module.

[c16] 16.The communication system of claim 15 wherein the electronic device comprises a second antenna, and the first RF circuit of the external communication module is connected to the second antenna to emit and receive the RF signals through the second antenna.

[c17] 17.The communication system of claim 15 wherein the electronic device comprises a second antenna, the external communication module comprises a first antenna, the second RF circuit of the electronic device is connected to the second antenna to emit and receive the RF signals through the second antenna, and the first RF circuit of the external communication module is connected to the first antenna to emit and receive the RF signals through the first antenna.

[c18] 18.The communication system of claim 17 wherein the electronic device and the external communication module are controlled by a main control interface.

[c19] 19.The communication system of claim 18 wherein the electronic device comprises a second memory, and the external communication module comprises a first memory.

[c20] 20.A communication system comprising:
an electronic device having a power source;
an external communication module connecting to the electronic device for providing a first protocol wireless communication, the external communication module comprising a battery, an antenna, a first RF circuit, and a first baseband circuit, wherein the RF circuit connects to the antenna to emit and receive RF signals; and

a connecting device for connecting the electronic device with the external communication module for providing electrical signal transmission therebetween.

- [c21] 21.The communication system of claim 20 wherein the battery of the external communication module receives power from the power source of the electronic device through the connecting device.
- [c22] 22.The communication system of claim 20 wherein the external communication module are controlled by a main control interface of the electronic device.
- [c23] 23.The communication system of claim 22 wherein the electronic device comprises a second memory, and the external communication module comprises a first memory.